

## Application note

# Addressable limits of the spaceLYnk controller

**How many icons, frames, cameras, graphs.. can I design  
in my spaceLYnk project?**



# Safety Information

## Important Information



Read these instructions carefully before trying to install, configure, or operate this software. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

### WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

### CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

### NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

## Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

## Safety Precautions

<b>⚠ WARNING</b>
<p><b>HAZARD OF INCORRECT INFORMATION</b></p> <ul style="list-style-type: none"><li>• Do not incorrectly configure the software, as this can lead to incorrect reports and/or data results.</li><li>• Do not base your maintenance or service actions solely on messages and information displayed by the software.</li><li>• Do not rely solely on software messages and reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.</li><li>• Consider the implications of unanticipated transmission delays or failures of communications links.</li></ul> <p><b>Failure to follow these instructions can result in death, serious injury, or equipment damage.</b></p>

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information that is contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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# 1 Introduction

This application note is addressed to System Integrators and Commissioning Engineers who automate buildings using spaceLYnk controller. This application note describes addressable limits of various objects within the spaceLYnk project. These limits are solely theoretical. The CPU load, latency time and reliability in operation depend on the complexity of functions implemented in your project. Thus the number of below described objects will be always lower than addressable limits. You can for example place 100 icons on the floor plan, however as soon as you access all of them, the overload of the controller may lead to significant delays in reaction.

Limits are specified up to common automation demands placed on the controller and will help to understand its capability.

A glossary is available in the appendix chapter of this document. Please refer to it whenever necessary.

## Competencies

This document is intended for readers who have been trained on spaceLYnk product.

## System prerequisites

Software	Version	Download
spaceLYnk	2.1	<a href="http://www.schneider-electric.com">http://www.schneider-electric.com</a>
Building Operation WorkStation	1.4 and newer	<a href="http://buildings.schneider-electric.com">http://buildings.schneider-electric.com</a>
Enterprise Server	latest version	<a href="http://buildings.schneider-electric.com">http://buildings.schneider-electric.com</a>

Table 1: software versions under test

## 2 Addressable limits

### 2.1 Plan graphics

spaceLYnk FW V1.2.1 and lower has a limitation on JSON HTTP response to 256 KB – i.e. count of objects per plan can vary around given limit. Upper versions have limit of 16 MB, which allows you to configure your project covering any practical needs.

#### 2.1.1 Widgets per plan

Quantity	Description
32 widgets	Widget size 300x300 pxl Widget includes 3 objects with different icon (50x50 pxl) and different format value

#### 2.1.2 Icons per plan

Quantity	Description
159 icons	Show "Icon" <b>The same</b> graphical icon for all objects ("bulb" from library) 116x 1-bit object (On/Off icon) 34x 1-Byte object (default Off icon) 9x 4-Byte object (default Off icon)  <b>Note:</b> browser may collapse when over 95 icons are inserted
168 icons	Show "Icon" <b>Different</b> graphical icon for each object (app. 10 KB each) 125x 1-bit object (On/Off icon) 34x 1-Byte object (default Off icon) 9x 4-Byte object (default Off icon)  <b>Note:</b> browser may collapse when over 100 icons are inserted



### 2.1.3 Values per plan

Quantity	Description
160 values	Show "Value" 160 defined objects in format proportion 10 x1bit, 4 x1B, 1 x4B (10:4:1≈1b:1B:4B)

### 2.1.4 Value and icon per plan

Quantity	Description
168 icons with value	Show "Icon and value" <b>The same or different icons</b> 168 defined objects 10:4:1≈1b:1B:4B

### 2.1.5 Images per plan

Quantity	Description
32 images	Different images Size 640x480 (app.35 KB)

### 2.1.6 Frames per plan

Quantity	Description
16 frames	Different frames (5 trends, 5 schedulers, 6 URL)

### 2.1.7 Gauges per plan

Quantity	Description
32 gauges	Different gauges, one plan 32 defined objects – 4B unsigned integer Size 640x480 (app.35 KB)

## 2.1.8 Cameras per plan

Quantity	Description
16 cameras	Different cameras, one plan Size 800x600 pxl

## 2.1.9 Graphs

Quantity	Description
16 graphs	16 script generating random numbers (4B unsigned int.) 16 objects Show last 100 values

## 2.2 Vis. Structure

### 2.2.1 Count of levels

Quantity	Description
8 levels	8 Main Levels Each Main Level has 8 secondary Levels Each Secondary Level has 8 empty plans Total empty plans = $8 \times 64 = 512$

### 2.2.2 Count of layouts

Quantity	Description
16 layouts	16 empty layouts

### 2.2.3 Count of widgets

Quantity	Description
64 widgets	Different images Size 640x480 (app.35 KB)

## 2.3 Vis. Graphics

### 2.3.1 Max size of imported graphics

All icons, images and backgrounds (\*.svg or \*.png) must be lower than 2 MB in size. If any icon/image/background is bigger than 2 MB, it is excluded from import to the project.

Quantity	Description
Unzipped file <16 MB	Size dependent limit <b>Note:</b> No system warning!

### 2.3.2 Count of icons

Quantity	Description
512 icons	The same graphics, but different name Size 640x480 (app.35 KB) Size dependent limit

### 2.3.3 Count of images/backgrounds

Quantity	Description
64 images/backgrounds	The same graphics, but different name Single size app. 100 KB Size dependent limit

## 2.4 Other limits

### 2.4.1 Max project backup size

Quantity	Description
16 MB	Bigger projects than 16 MB can be backed up, but never restored. If backup file over 16 MB, reduce graphical objects in design and back up again. <b>Note:</b> Check the size of your backup after each export!

### 2.4.2 Limit of BACnet points

Quantity	Description
150 points	Validated on export to the SBO (StruxureWare Building Operation)

### 2.4.3 Limit of KNX objects

Quantity	Description
32 640 data points	*.esf file (44% 1-bit, 31% 1-byte, 25% 2-byte GAs) Test made on 2014, 8160, 32640 group addresses It is not possible to import more than 32640 GAs because they belong to extended memory range.  <b>Note:</b> you can import max. 100 GAs of the same name <b>Note:</b> clicking on the tab "Objects" needs app. 20 seconds until 8160 imported objects are visible

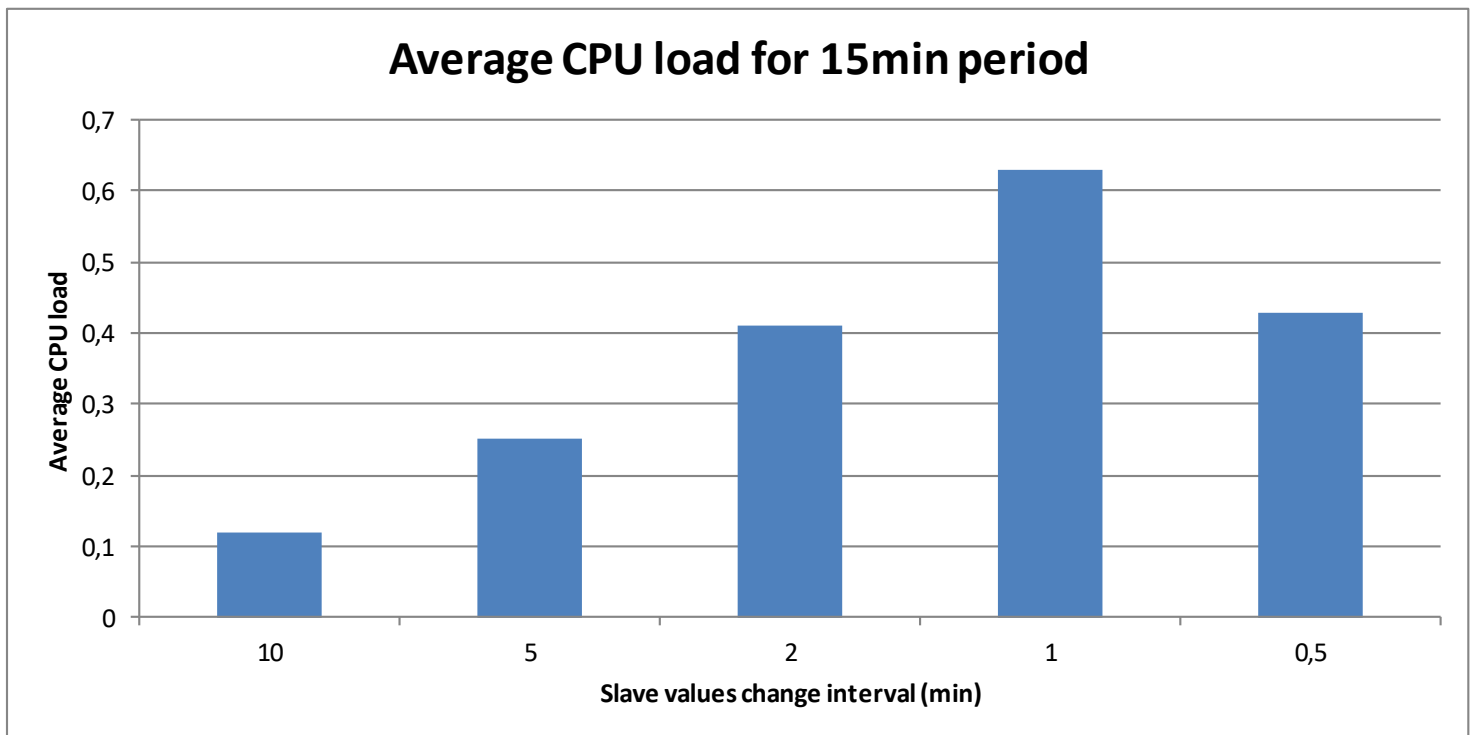
## 2.4.4 Limit of Modbus TCP/IP

Quantity	Description
1000 data points	Simulation scenario: 1x spaceLYnk as a Modbus master 10x spaceLYnk as a Modbus slave

Each Modbus slave has 100 data points which are periodically updated by random values. Modbus master read out changed values from slaves and updated 1000 mapped data points with defined poll interval.

Results:

Slave values changed interval	Master poll interval	Average CPU load for 15min period
10 min	60 sec	0,12
5 min	60 sec	0,25
2 min	60 sec	0,41
1 min	60 sec	0,63
0,5 min	60 sec	0,43



## 2.4.5 Size of LUA script

All limits relate to size of one single script. Maximum size of one script is around 130 000 characters of code.

Back up size / Lines / Characters	Description
9,5 KB / 5 869 / 131 059	Different use cases how to reach the maximum size of one script
6,9 KB / 2 291 / 131 059	
12 KB / 575 / 128 887	

## 3 Conclusion

Please be aware that approaching tested limits may cause delayed response time of the system.

This response time will grow with increased demands on implemented functionality or scripts.

We advise to monitor the CPU load for a longer time to get a feeling of a well-configured project

(CPU load must be lower than 0.7 to be on the safe operational side).

## 4 Appendix

### 4.1 Glossary

The following table describes the acronyms and defines the specific terms used in this document.

Abbreviation	Description
GA	Group Address
SBO	StruXureware Building Operation system

Table 2: specific terms

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